

REMARKS

I. Introduction

Claims 1-5, 8, 9, 12, 14 and 17-19 are currently pending in this application. Claims 1 and 17 have been amended to positively recite the structural element of the present invention, claim 12 has been amended to clarify the readability of the claim and claims 13 and 15 have been cancelled without prejudice. Claims 18 and 19 have been added and are supported by original claims 1, 2, 3, 8, 9, 12 and 17 and throughout the specification, for example, on page 16, lines 14-19. No new matter has been added.

II. Claim rejections under 35 U.S.C. § 103(a)

Claims 1-5, 8, 9, 12-15 and 17 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Kilb (US 2001/0016282) in view of Yanagihara (US 5543250). Applicants respectfully disagree.

However in an effort to expedite prosecution, independent claims 1 and 17 have been amended and now each positively recite, in pertinent part, that the collector plate conductive sheet comprises a **corrugated plate** having a plurality of pores and protrusions around the pores and the protrusions around the pores closest to each other are directed in opposite directions (see, for example, FIGS. 2-4).

Neither Kilb nor Yanagihara teach or suggest a collector plate conductive sheet that comprises a corrugated plate having a plurality of pores and protrusions around the pores and the protrusions around the pores closest to each other are directed in opposite directions.

The Examiner on page 4 of the office action mailed December 3, 2009 concedes that Kilb does not disclose a plate with protrusions, therefore Yanagihara is relied on for this alleged

disclosure. However, Yanagihara fails to cure the deficiencies of Kilb because at a minimum, Yanagihara does not teach or suggest a corrugated plate as recited in claims 1 and 17.

Moreover, Applicants respectfully disagree with the assertion on page 6 of the office action mailed December 3, 2009, that the present invention allegedly does not achieve unexpectedly improved results.

Table 4 clearly shows that battery F-6 which has a corrugated plate, achieves significantly improved battery capacity compared to other batteries not having a corrugated plate. Indeed, battery F-6 with a corrugated plate exhibits, not a slightly better performance, but unexpectedly, the best performance in Table 4.

Furthermore, in the present invention, as recited in claims 1 and 17, a gas transfer path is obtained by using the corrugated plate as discussed above. In contrast, the spring 7 of Kilb is for securing conductivity created due to the electrode being pressed when the internal pressure in the battery rises, and is usually in a compressed state. Therefore, it is clear that there no gap exists between the spring 7 and the sealing plate and thus no gas transfer path is present in Kilb.

Moreover, the current collector plate of the present invention has protrusions on both sides, and therefore, the protrusions on one side are exposed without being embedded in the electrode. Further, the exposed protrusions are joined to the inner face of the battery case as well as the inner face of the sealing plate, and also form gaps at predetermined intervals. Such exposed protrusions are not taught or suggested by Kilb or Yanagihara.

Therefore, none of the cited prior art references teach or suggest all of the elements of claims 1 and 17. Furthermore, a person having ordinary skill in the art would not have found it obvious to modify Kilb in view of Yanagihara in such a manner as to achieve the configuration

of the present invention as recited in claims 1 and 17, as the present invention achieves unexpectedly improved battery capacity, as shown in Table 4 and discussed above.

Accordingly, it is respectfully submitted that claims 1 and 17 are allowable over the cited prior art references. Furthermore, claims 2-5, 8, 9, 12 and 14 depend from and further define the subject matter of claim 1 and therefore are also allowable.

III. New claims 18 and 19

Claims 18 and 19 are also allowable over the cited prior art references, for at least the reasons discussed above in reference to claims 1 and 17. Furthermore, independent claims 18 and 19 are further allowable over the cited prior art references as they each recite that the thickness of the metal sheet is between 20 to 50 μm . Neither Kilb nor Yanagihara teach or suggest such a configuration.

Accordingly, claims 18 and 19 are allowable over the cited prior art references.

In view of the above amendments and remarks, Applicants respectfully submit that this application should be allowed and the case passed to issue. If there are any questions regarding this Amendment or the application in general, a telephone call to the undersigned would be appreciated to expedite the prosecution of the application.

Application No.: 10/511,199

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

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